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EXAMINER	
ZHENG, EVA Y	

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Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary	Application No. 09/841,080	Applicant(s) KUROZUMI ET AL.
	Examiner Eva Yi Zheng	Art Unit 2634

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-11 and 13-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-7,9-11,13-17,19-22* is/are rejected.

7)☒ Claim(s) *8,18,23 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on 12/23/2004 have been fully considered but they are not persuasive. The Examiner has thoroughly reviewed Applicant's arguments but firmly believes that the cited reference reasonably and properly meet the claimed limitation as rejected.

a) Applicant's argument – neither Takebayshi nor Bossemeyer suggest four kinds of distortion signals: reference feature time-series signal, input feature time-series signal, reference coded time-series signal, and input coded time-series signal.

Examiner's response – Claims 1-9, 9-17 and 20-22 are rejected under 35 U.S.C 103 (a), where Takebayshi was used as primary reference. Takebayshi disclose an improvement of the recognition performance for a speech recognition device, wherein block 12 in Fig. 1 analysis input time-series signal (constitute as input feature time-series signal); output of block 12 split is in two portions, one to a portion of the input time-series signal convert to feature vector input signal as shown in block 14 (constitute as input coded time-series signal), and the other portion of signal (constitute as reference feature time-series signal); the input time-series also convert to feature vector reference signal as shown in block 16 (constitute as reference coded time-series signal). This also can be found in Col 3, L27-57. Therefore, Takebayshi teach all four kinds of distortion signals.

b) Applicant's argument – neither Takebayshi nor Bossemeyer suggest that when the distortion is added to the reference feature time-series signal or the input feature time-series signal, the addition of the distortion is performed for each feature vector.

Examiner's response – Takebayshi disclose noise addition to the reference coded time-series signal (block 48 in Fig. 6). Examiner recognizes the claim limitation: "a distortion adding step of adding a distortion to **at least one of** ………" is a Markush type of and is in alternative form. *The examiner may require a provisional election of a single species, CA, CB, CC, CD, or CE. The Markush-type claim would then be examined fully with respect to the elected species and any species considered to be clearly unpatentable over the elected species.* (See MPEP 803)

Therefore, Takebayshi meet claim limitation.

c) Applicant's argument – Rejection of 35 U.S.C 103 (a)

Examiner's response - The Examiner notes that the Applicant chooses to dispute only the manner in which the two references are combined and whether a reason or suggestion for the combination exists. The Applicant neither argues any of the specific claimed limitations addressed in the Examiner's rejection as being distinguished over the references nor points to any distinctive advantages of the claimed invention. 37 C.F.R. § 1.192 (c) (8) (iv) states that:

> For each rejection under 35 U.S.C. 103, the argument shall specify the errors in the rejection and, if appropriate, the specific limitations in the rejections in the rejected claims which are not described in the prior art relied on in the rejection, and shall explain how such limitations render the claimed subject matter unobvious over the prior art. If the rejection is based upon a combination of references, the argument shall explain why the references, taken as a whole, do not suggest the claimed subject matter, and shall include, as may be appropriate, an explanation of why features disclosed in one reference may not

> properly be combined with features disclosed in another reference. A general argument that all the limitations are not described in a signal reference does not satisfy the requirements of this paragraph.

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rilckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993) and in re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). A prima facie case of obviousness is established by presenting evidence that the reference teachings would appear to have suggested the claimed subject matter to one of ordinary skill in the art. See In re Bell, 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993); In re Fritch, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992); Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988); Ashland Oil, Inc. v. Delta Resins & Refractories Inc, 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985).

The Examiner points to Takebayashi et al. disclose all of the subject matter except for the specific teaching of generating histograms for calculating a degree of similarity between the reference and input coded time-series signal.

Bossemeyer, Jr., in the same field of endeavor, teaches a histogram collating step of determining a collation portion in the input coded time-series signal, generating histograms of both the reference coded time-series signal and the collation portion of the input coded time-series signal, and calculating a degree of similarity between the reference coded time-series signal and the collation portion based on the generated histograms (Fig. 14; Col 9, L11-17 and Fig. 9A), and wherein the degree of similarity is

compared with a predetermined target degree of similarity (362 in Fig. 9A), and the histogram collating step is repeatedly executed while changing the collation portion in the input coded time-series signal, thereby determining whether the reference time-series signal is present in the relevant portion of the input time-series signal (Fig. 9A). The amplitude histogram measures the number of samples in each bit of amplitude from the digitizer. A poorly performing digitizer can degrade the performance of the speech reference system (Col 9, L12-18). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to substitute the pattern matching section by Takebayashi et al. with Bossemeyer's histogram and degree of similarity method in order for better and more accurate speech signal detection, processing, matching and recognition.

The Applicant does not rebut any of these assertions.

When an obviousness determination relies on the combination of two or more references, there must be some suggestion or motivation to combine the references. See In re Rouffet, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998). The suggestion to combine may be found in explicit or implicit teachings within the references themselves, from the ordinary knowledge of those skilled in the art, or from the nature of the problem to be solved. See id. at 1357, 47 USPQ2d at 1458. Moreover, as long as some motivation or suggestion to combine the references is provided by the prior art taken as a whole, the law does not require that the references be combined for the reasons contemplated by the inventor. See In re Dillon, 919 F.2d 688, 693, 16

USPQ2d 1897, 1901 (Fed. Cir. 1990)(en banc), cert. denied, 500 U.S. 904 (1991) and In re Beattie, 974 F.2d 1309, 1312, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992).

Therefore, the Examiner's 35 U.S.C. § 103 rejection of claims over Takebayashi et al. and Bossemeyer is sustained.

Claim Objections

2. Claims 1, 11 and 21 are rejected to because of the following informalities: recitation: “a distortion adding step......feature vector” is a Markush type claim, an alternative form. It should follow the format of: “at least one of......or”. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-7, 9-17, and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takebayashi et al. (US 4,783,802) in view of Bossemeyer, Jr. (US 6,012,027).

a) Regarding claim 1, Takebayashi et al. disclose a signal detection method of searching an input time-series signal for a signal portion similar to a reference time-

series signal which is registered in advance and is shorter than the input time-series signal, the method comprising:

a reference feature calculating step of obtaining a reference feature time-series signal from the reference time-series signal, where the reference feature time-series signal consists of feature vectors (16 in Fig. 1; Col 3, L36-38);

an input feature calculating step of obtaining an input feature time-series signal from the input time-series signal, where the input feature time-series signal consists of feature vectors (14 in Fig. 1; Col 3, L32-36);

a reference feature coding step of converting the reference feature time-series signal into a reference coded time-series signal consisting of codes which indicate classifications (Fig. 3; Col 3, L 30- Col 4, L 9);

an input feature coding step of converting the input feature time-series signal into an input coded time-series signal consisting of codes which indicate classifications (Fig. 3; Col 3, L 30- Col 4, L 9);

a distortion adding step of adding a distortion to at least one of the reference feature time-series signal, the input reference time-series signal, the reference coded time-series signal, and the input coded time-series signal (48 in Fig. 6); wherein when the distortion is added to the reference feature time-series signal or the input feature time-series signal, the addition of the distortion is performed for each feature vector.

Takebayashi et al. disclose all of the subject matter as described above except for the specific teaching of generating histograms for calculating a degree of similarity between the reference and input coded time-series signal.

Bossemeyer, Jr., in the same field of endeavor, teaches a histogram collating step of determining a collation portion in the input coded time-series signal, generating histograms of both the reference coded time-series signal and the collation portion of the input coded time-series signal, and calculating a degree of similarity between the reference coded time-series signal and the collation portion based on the generated histograms (Fig. 14; Col 9, L11-17 and Fig. 9A), and

wherein the degree of similarity is compared with a predetermined target degree of similarity (362 in Fig. 9A), and the histogram collating step is repeatedly executed while changing the collation portion in the input coded time-series signal, thereby determining whether the reference time-series signal is present in the relevant portion of the input time-series signal (Fig. 9A).

The amplitude histogram measures the number of samples in each bit of amplitude from the digitizer. A poorly performing digitizer can degrade the performs of the speech reference system (Col 9, L12-18). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to substitute the pattern matching section by Takebayashi et al. with Bossemeyer, Jr.'s histogram and degree of similarity method in order for better and more accurate speech signal detection, processing, matching and recognition.

b) Regarding claims 3 and 13, Takebayashi et al. disclose a signal detection method/apparatus, wherein when the distortion is added to any one of the reference feature time-series signal and the input feature time-series signal in the distortion adding step, a plurality of distortions are added to each feature vector of said one of the

reference feature time-series signal and the input feature time-series signal (Fig. 5; Col 7, L21-49).

c) Regarding claim 4 and 14, Takebayashi et al. disclose a signal detection method/apparatus, wherein when the distortion is added to any one of the reference coded time-series signal and the input coded time-series signal in the distortion adding step, a plurality of distortions are added to each code of said one of the reference coded time-series signal and the input coded time-series signal (Fig. 5; Col 7, L21-49).

d) Regarding claim 5 and 15, Takebayashi et al. disclose a signal detection method/apparatus, further comprising:

a learning step of calculating, in advance, an amount of distortion used for distorting features in the distortion adding step (Col 7, L 26-30), and

wherein in the distortion adding step, the distortion is added based on the amount of distortion calculated in the learning step (Col 7, L 30-40).

e) Regarding claim 6 and 16, Takebayashi et al. disclose a signal detection method/apparatus, wherein the amount of indicating whether the reference time-series signal is present in the relevant portion of the input time-series signal (Col 7, L 21-30).

f) Regarding claim 7 and 17, Takebayashi et al. disclose a signal detection method/apparatus, wherein in the distortion adding step, the add distortion is generated using random numbers (Fig. 5; Col 7, L21-49). It is well known that noise or distortion signals are generated by randomly analog or digital numbers.

g) Regarding claims 9 and 19, Takebayashi et al. disclose all the subject matters described above except for the specific teaching of the input time-series signal and the

reference time-series signal are each picture signals. However, it is well known that a speech signal detection is similar to video signal detection. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to conclude that the speech system by Takebayashi et al. can be used for picture signal detection.

h) Regarding claims 10 and 20, Takebayashi et al. disclose a signal detection method/apparatus, wherein the input time-series signal and the reference time-series signal are each audio signals (as shown in Fig. 1; abstract).

i) Regarding claim 11, Takebayashi et al. disclose a signal detection apparatus for searching an input time-series signal for a signal portion similar to a reference time-series signal which is registered in advance and is shorter than the input time-series signal, the apparatus comprising:

a reference feature calculating section for obtaining a reference feature time-series signal from the reference time-series signal, where the reference feature time-series signal consists of feature vectors (16 in Fig. 1; Col 3, L36-38);

an input feature calculating section for obtaining an input feature time-series signal from the input time-series signal, where the input feature time-series signal consists of feature vectors (14 in Fig. 1; Col 3, L32-36);

a reference feature coding section for converting the reference feature time-series signal into a reference coded time-series signal consisting of codes which indicate classifications (Fig. 3; Col 3, L 30- Col 4, L 9);

an input feature coding section for converting the input feature time-series signal into an input coded time-series signal consisting of codes which indicate classifications (Fig. 3; Col 3, L 30- Col 4, L 9);

a distortion adding step of adding a distortion to at least one of the reference feature time-series signal, the input reference time-series signal, the reference coded time-series signal, and the input coded time-series signal (48 in Fig. 6); wherein when the distortion is added to the reference feature time-series signal or the input feature time-series signal, the addition of the distortion is performed for each feature vector.

Takebayashi et al. disclose all of the subject matter as described above except for the specific teaching of generating histograms for calculating a degree of similarity between the reference and input coded time-series signal.

Bossemeyer, Jr., in the same field of endeavor, teaches a histogram collating section of determining a collation portion in the input coded time-series signal, generating histograms of both the reference coded time-series signal and the collation portion of the input coded time-series signal, and calculating a degree of similarity between the reference coded time-series signal and the collation portion based on the generated histograms (Fig. 14; Col 9, L11-17 and Fig. 9A), and

wherein the histogram collating section determines different collation portion in the input coded time-series signal in turn, calculates the degree of similarity for each collation portion, compares the calculated degree of similarity with a predetermined target degrees of similarity (362 in Fig. 9A), and repeatedly executes the comparison for

each determined collation portion, thereby determining whether the reference time-series signal is present in the relevant portion of the input time-series signal (Fig. 9A).

The amplitude histogram measures the number of samples in each bit of amplitude from the digitizer. A poorly performing digitizer can degrade the performs of the speech reference system (Col 9, L12-18). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to substitute the pattern matching section by Takebayashi et al. with Bossemeyer, Jr.'s histogram and degree of similarity method in order for better and more accurate speech signal detection, processing, matching and recognition.

j) Regarding claim 21, Takebayashi et al. disclose a program for making a computer execute a signal detecting operation of searching an input time-series signal for a signal portion similar to a reference time-series signal which is registered in advance and is shorter than the input time-series signal, the operation comprising:

a reference feature calculating step of obtaining a reference feature time-series signal from the reference time-series signal, where the reference feature time-series signal consists of feature vectors (16 in Fig. 1; Col 3, L36-38);

an input feature calculating step of obtaining an input feature time-series signal from the input time-series signal, where the input feature time-series signal consists of feature vectors (14 in Fig. 1; Col 3, L32-36);

a reference feature coding step of converting the reference feature time-series signal into a reference coded time-series signal consisting of codes which indicate classitications (Fig. 3; Col 3, L 30- Col 4, L 9);

an input feature coding step of converting the input feature time-series signal into an input coded time-series signal consisting of codes which indicate classifications; (Fig. 3; Col 3, L 30- Col 4, L 9);

a distortion adding step of adding a distortion to at least one of the reference feature time-series signal, the input reference time-series signal, the reference coded time-series signal, and the input coded time-series signal (48 in Fig. 6); wherein when the distortion is added to the reference feature time-series signal or the input feature time-series signal, the addition of the distortion is performed for each feature vector.

Takebayashi et al. disclose all of the subject matter as described above except for the specific teaching of generating histograms for calculating a degree of similarity between the reference and input coded time-series signal.

Bossemeyer, Jr., in the same field of endeavor, teaches a histogram collating step of determining a collation portion in the input coded time-series signal, generating histograms of both the reference coded time-series signal and the collation portion of the input coded time-series signal, and calculating a degree of similarity between the reference coded time-series signal and the collation portion based on the generated histograms (Fig. 14; Col 9, L11-17 and Fig. 9A), and

wherein the degree of similarity is compared with a predetermined target degree of similarity (362 in Fig. 9A), and the histogram collating step is repeatedly executed while changing the collation portion in the input coded time-series signal, thereby determining whether the reference time-series signal is present in the relevant portion of the input time-series signal (Fig. 9A).

The amplitude histogram measures the number of samples in each bit of amplitude from the digitizer. A poorly performing digitizer can degrade the performs of the speech reference system (Col 9, L12-18). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to substitute the pattern matching section by Takebayashi et al. with Bossemeyer, Jr.'s histogram and degree of similarity method in order for better and more accurate speech signal detection, processing, matching and recognition.

5. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takebayashi et al. in view of Bossemeyer, Jr., and further in view of Langberg et al. (US 5,852,630).

Takebayashi et al. and Bossemeyer, Jr. disclose all the subject matters described above except for the specific teaching of a computer readable storage medium storing a program.

However, Langberg et al. teaches that the method and apparatus for a transceiver warm start activation procedure with precoding can be implemented in software stored in a computer readable medium. The computer readable medium is an electronic, magnetic optical, or other physical device or means that can be contain or store a computer program for use by or in connection with a computer related system for method (Col 3, L51-65). One skilled in the art would have clearly recognized that the method of Takebayashi et al. and Bossemeyer, Jr. would have been implemented in software. The implemented software would perform same function of the hardware for less expense, adaptability, and flexibility. Therefore, it would have been obvious to use

the software in the system of Takebayashi et al. and Bossemeyer, Jr. as taught by Langberg et al. in order to reduce cost and improve the adaptability and flexibility of the communication system.

Allowable Subject Matter

6. Claims 8, 18, 23, and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eva Yi Zheng whose telephone number is (571) 272-3049. The examiner can normally be reached on 7:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571) 272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-879-9306.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Eva Yi Zheng
Examiner
Art Unit 2634

April 8, 2005

SHUWANG LIU
PRIMARY EXAMINER